# Method in and device for the manual lubrication of a plurality of lubrication points

The present invention relates to a method according to the pre-characterising part of claim 1 and a device according to the pre-characterising part of claim 6.

In the manual lubrication of a machine, for example a papermaking machine, having a plurality of lubrication points, the person carrying out the lubrication has, as an aid to memory, a lubrication diagram containing information on the location of each lubrication point on the machine, the frequency of lubrication for that lubrication point and the requisite quantity of lubricant. Performance of the lubrication is usually confirmed by entering a date and signature for all lubrication points.

It has been shown that information on the lubrication carried out is sometimes incorrect, there being many possible reasons for this, but the important fact is that failure to carry out lubrication may cause serious damage to machinery with machine shutdowns, resulting in lost production. The question of proof is a difficult one when it comes to verifying in the case of a damaged bearing, for example, whether or not lubrication has been carried out in the prescribed manner.

The object of the present invention is to provide a method of the said type, by means of which the lubrication of all lubrication points with the correct quantity of lubricant can be ensured and in which the lubrication is reliably documented. This is achieved by means of the features specified in the characterising part of claim 1.

A device according to the invention has a combination of the characteristics specified in claim 6.

The invention will be explained in more detail below with reference to the drawing attached in which figure 1 shows a diagram of a device according to the invention and figure 2 illustrates the functioning thereof.

In the drawing 1 generally denotes a lubricant gun, which is connected by way of a line 2 to a lubricant reservoir (not shown). The gun contains a pump, which is manually actuated by means of a lever 3, and a measuring device 4 with indicating element 5. The lubricant reservoir is connected by way of the line 2, the pump device and the measuring device 4 to a nozzle 6 arranged on a tube 7.

A control element 8, on the casing of which the indicating element 5 is suitably mounted, is connected to the measuring device 4, the pump device and lubrication point identification device 9 arranged at the nozzle 6. The said identification device is designed to interact with an identification element 11, assigned to each lubrication point 10 and located so that when the nozzle 6 is connected to the nipple of the lubrication point 10 the lubrication point identification device is capable of reading off the information in the identification element that is unique to the lubrication point in question.

In the embodiment shown in figure 1 the control element 8 is designed to be connected by radio communication, shown by a line 14, to a fixed computer 12, the memory of which contains data on the lubrication requirement of each separate lubrication point. By means of radio communication, therefore, information on the quantity of lubricant for each separate lubrication point is transmitted to the control element 8, and information on the lubrication performed at the individual lubrication points is transmitted from the control element 8 to the memory of the computer, so that following a lubrication round the computer memory contains information on which lubrication points have been visited and what quantity of lubricant has been administered. It is thereby possible to produce a lubrication report either on the screen 13 of the computer 12 or in a conventional printout, in which there is the facility for specially identifying any lubrication points missed.

Radio communication implies communication in real time. The scope of the invention obviously also includes communication by other means based, for example, on infrared technology, and an alternative embodiment, according to which the control element 8 contains a memory, which can be connected to the memory of the computer 12 in such a way that prior to a lubrication round information regarding the quantity of lubricant is fed to the memory of the control element 8 and following the lubrication round the memory of the computer 12 is updated by a transfer of information from the memory of the control element 8.

Referring to figure 2, it will now be explained what happens before, during and after a lubrication round. It will be obvious that the process differs depending on whether the control element 8 of the lubricant gun 1 is designed to communicate with the computer 12 in real time or whether the control device 8 is equipped with a memory that is coupled to the computer 12 for the exchange of information before and after a lubrication round. In the first aforementioned case the information is transferred

between the computer 12 and the control element 8 instead of to each separate lubrication point. In figure 2 the transmission of the lubrication requirement of each lubrication point to the control element 8 is indicated by a block 15. The person carrying out the lubrication round, hereinafter called the greaser, either follows a predetermined lubrication route or carries out the lubrication round in the individual lubrication point order indicated on the indicating element 5 of the lubrication gun 1. When the nozzle 6 of the lubricant gun 1 is connected to a lubrication point 10, information on the lubrication point in question is obtained automatically by means of identification elements 11 belonging to the lubrication point in question and the identification device 9 of the lubricant gun 1 on the indicating element 5. Information on the quantity of lubricant that is to be administered to the lubrication point is either stored in the control element 8, or it is fed to the latter in real time from the computer 12 and this information shown on the indicating element 5, when the identity of the lubrication point has been verified. The greaser begins dosing the lubrication point and can continuously see on the indicating element 5 how much lubricant has been fed in by means of the measuring device 4, or alternatively what quantity of lubricant still remains to be administered to the lubrication point (countdown). An audible alarm device 16 is appropriately designed to warn the greaser that the set dosage has been reached. Information on the lubrication performed is stored in the control unit 8 or is transmitted in real time to the computer 12. In figure 2, information lists 17 symbolise the fact that this information can be taken from the control element 8, but it will be obvious that corresponding information can be retrieved from the fixed computer 12 or shown on the screen 13.

If, after completing a lubrication round, there are one or more lubrication points that have not been visited, a warning to this effect is received from the control unit 8 either on the screen 13 or through a separate print-out. There is therefore no risk whatsoever of damage possibly occurring as a result of failure to carry out lubrication.